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Project 5. Angler Behavior Studies

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ANNUAL PERFORMANCE REPORT

State of: Idaho Grant No.: F-73-R-18. Fishery Research

Project No.: **5** Title: Angler Behavior Studies

Contract Period: April 1. 1995 to June 30. 1996

ABSTRACT

During the past year, I began to develop resource sociology tools that will allow the Idaho Department of Fish and Game to better predict angler behavior and potential responses to management efforts. I initiated random selection of Spokane River drainage anglers for development of a longitudinal panel study designed to examine potential displacement and shifts in angler attitudes following implementation of special regulations on wild trout streams. Working with Panhandle Region personnel, an initial attitudinal survey was developed for Spokane River tributaries, including the St. Joe, Coeur d'Alene and St. Maries rivers. Subsequent surveying of the same anglers will be conducted for the next five years to investigate the effects of likely regulation changes on angler attitudes and fishing behavior. I also conducted extensive literature reviews, developed out-of-state contacts with experts skilled in the use of focus groups, and obtained training in mediation/moderator methods, with the intention of conducting focus groups in the upcoming year. I conducted a major angler workshop in concert with Upper Snake Region fishery management personnel on Henrys Lake, provided in-house training on the method, and began work on a future workshop on Priest Lake. Improved fishery data was collected during the project period to provide additional perspective on the biological significance of angler non-compliance as estimated by this project in the past.

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INTRODUCTION

Enhancing public involvement with management issues and decisions is clearly one of the most pressing of current fishery management issues. Obtaining public input solely via public meetings and open houses is risky because often only the most strident or specialized sportsmen attend such forums. What the average or majority of sportsmen desire or feel can often go unrecorded in such situations. Idaho fishery managers attempt to overcome some of these limitations by conducting randomly-distributed questionnaires designed to include the entire angling population (e.g. Reid 1989). Such surveys undoubtably have improved past management decisions and Idaho Department of Fish and Game (IDFG) reliance on them is likely to increase.

Despite the effectiveness of typical quantitative surveys, the methodology is subject to certain limitations. The development of questions and associated response categories by survey designers puts restrictions on the range of possible responses and information obtainable. The design of a typical questionnaire permits designer pre-perceptions to influence not only what is asked but how respondents may answer (Kreuger 1988). In addition, despite the commonplace use of Likert scales, standard surveys are usually much better at summarizing *what* the public thinks at a given moment in time and does little to explain *why.* Thus, important values underlying attitudes of the public can remain undetected with standard surveys.

One method of obtaining public input that has not been employed in Idaho fishery management is the use of focus groups. A focus group is usually comprised of eight to ten people with suspected homogenous views or attitudes who discuss a brief list of topics pre-scripted by a trained moderator. Originally conceived for use in marketing research to assess consumer attitudes and preferences, focus groups have received limited attention in the fish and wildlife field (e.g. Bissell and Duda 1993). Although they are sometimes conducted prior to development of full-scale quantitative surveys to identify issues and potential questions, recent evidence suggests that focus groups may be appropriate as a stand-alone methodology for garnering pubic opinions and attitudes (Ward et al. 1991).

Typically the domain of consultants and university specialists, focus groups are rarely conducted by fish and wildlife agencies directly. This is presumably because of the lack of trained moderators and the perceived potential for biased group responses to an agency employee serving as moderator (Minnis, D.L, Mississippi State University, personal communication). However, costs for consultant-provided focus groups typically range from $2,000-$2,500 per session and six to eight groups are often needed to solidify results. Given budget constraints, commonplace use of outside consultants to conduct focus group research is not a reality for IDFG. Fortunately, public agency employees have successfully conducted focus groups; they have been used by the Wisconsin Department of Natural Resources (DNR) for nearly a decade and have proven to be effective and less costly than traditional surveys in many situations (Ed Nelson, Wisconsin DNR, personal communication).

Another alternative to standard surveys in obtaining public input is the use of longitudinal surveys. Longitudinal panel surveys have been used to examine long-term changes in recreational behavior, but have received little attention by fisheries or wildlife workers (Craig Miller, University of Idaho, personal communication). A statewide angler panel has been in

existence in Texas for five years and has been set up to quantify changes in 1,500 saltwater angler attitudes and fishing behavior (R.B. Ditton, Texas A&M University, personal communication). A second panel, comprised of 4,393 anglers, has been set up in Mississippi to address various issues and to quantify angler compliance with fishing regulations (John Forbes, Social Science Research Center, Mississippi State University, personal communication). Both of the above panels have been set up to address various general issues statewide, and involve two contacts per year for panel members. These two studies are the only examples of panel studies constructed specifically to address fishery issues that I could locate by computerized literature view and contacts with "human dimensions" experts.

Although new, and therefore experimental, there are several reasons for IDFG to investigate the use of angler panels. First, we want to test the effectiveness of longitudinal surveys in assessing Idaho angler attitudes and opinions compared to our typical single questionnaire approach. The continued involvement of the same citizens on a variety of fishery management issues may provide a more firm understanding of public attitudes and desires than information gleaned from a single survey.

A second issue of concern to some Idaho fishery managers that panel surveys may be uniquely qualified to address is angler displacement due to implementation of special regulations. The fact that harvest-oriented anglers are largely displaced from special regulation fisheries upon implementation, initially producing substantial declines in angler effort, is well known (Shetter and Alexander 1962; Hunt 1970; Lewynsky 1986). Based on data obtained while conducting a recent nationwide regulation survey (Schill and Scarpella 1995), Idaho probably has more stream miles of special harvest restrictions than any other state. Some Idaho fishery managers have become concerned about where displaced anglers go and what effect continued trends in implementation of such regulations will have on traditional users and, ultimately, angler numbers.

Elle (1995) attempted to quantify the magnitude and implications of angler displacement due to implementation of the two fish wild trout bag limit on a variety of waters statewide. His survey study met with limited success, perhaps for several reasons. First, it attempted to quantify changes in angler attitude and behavior on a large number of streams concurrently. In addition, the survey was conducted well after regulations had been implemented on many study streams, likely resulting in high levels of recall bias (Elle 1995). Perhaps the biggest limitation of this study and an earlier exploratory effort (Elle 1994) was the lack of quantified information and attitudes and fishing habits prior to regulation implementation.

The formation of angler panels for waters where future changes in regulations are likely seems an especially attractive way to examine angler displacement. In this way, angler preferences, behavior and attitudes about IDFG can be obtained prior to public presentation or implementation of special harvest restrictions. Assuming some regulations changes will be adopted in the future, continued surveys of the same individuals will allow a longitudinal study of angler displacement and attitudes. This project reflects an attempt to undertake such research in the ensuing years.

The overall research goal for this project is to develop tools that better predict angler behavior and potential responses to IDFG management efforts. During the past year I began to develop skills in conducting focus groups and in designing angler panels. Much of the first year's work involved literature review, facilitation training, and contacts with out-of-state

human dimension experts. During the 1995-1996 contract period, work was limited to objectives one and four, discussed below.

OBJECTIVES

1. Estimate the biological effects of angler non-compliance at the population level.
2. Determine the validity of angler responses to mail, telephone and field interviews.
3. Develop techniques to quantify angler satisfaction.
4. Evaluate and recommend techniques to obtain angler opinions and public input.
5. Determine if angler satisfaction can be increased by modifying angler expectations.

METHODS AND RESULTS

Effects of Angler Non-Compliance

Schill and Scarpella (1995) developed point estimates of angler non-compliance for the St. Joe and Coeur d'Alene rivers, but noted the need for additional population dynamics data to assess the biological significance of these estimates. While collecting names and addresses for development of the future angler panel, the project creel clerk also conducted angler counts and recorded standard fishery data for use in calculating catch and harvest estimates. These estimates and additional population information will be developed by IDFG Panhandle Region fishery personnel and used in developing final regulation alternatives for the study waters. The same information will be used by this project in the future to complete modeling exercises that will provide population perspective on the non-compliance issue.

Techniques for Obtaining Angler Input

Fish Management Workshops

I continued efforts to educate and obtain input from the angling public using the Fish Management 101 Workshop format developed the previous year (Schill and Scarpella 1995). Prior to the start of the 1994 and 1995 fishing seasons, I assisted Upper Snake Region personnel in the design of aging, exploitation and population estimate studies on Henrys Lake. I subsequently assisted Upper Snake Region personnel with final data analysis and modeled theoretical cutthroat trout *Oncorhynchus clarki* populations in Henrys Lake, produced under various regulation options using the MOCPOP software (Beamesdurfer and North 1995).

During fall 1995, I presented results of our joint efforts to concerned Henrys Lake anglers in concert with Upper Snake Region personnel at a workshop. The general approach to the workshop was as described by Schill and Scarpella (1995). Regional fishery management personnel concluded that such a workshop modeling approach is a successful way to diffuse public controversy over optimum or proper angling regulations for high profile waters. Preliminary work was also begun with Panhandle Region management personnel on development of a similar workshop for another regulation decision on Priest Lake in northern Idaho that will likely prove quite controversial.

Angler Panels

Panel Formation. In spring 1996, I began developing a panel of trout stream fishermen comprised of Spokane River drainage anglers. Based on initial public input and biological considerations and existing regulation complexity, Panhandle Region fishery management staff are considering substantial changes in angling regulations in major Spokane River tributaries, including the St. Joe, Coeur d'Alene, and St. Maries rivers. Because changing angling restrictions on other Idaho waters in the past has resulted in substantial but unquantified angler displacement, we suspect a similar response if regulations are, in fact, changed. The formation of an angler panel, *a priori,* before any change in regulations, should allow us to better monitor the public response (both attitudinally and behaviorally) to regulation implementation. The project will quantify the percentage of anglers currently using the above waters who are actually displaced or cease fishing following a regulation change, and where they go if displacement has occurred. I will also attempt to measure any potential shifts in attitudes or support for IDFG as a management entity.

During spring 1996, Panhandle Region personnel randomly selected dates to survey anglers fishing the Coeur d'Alene and St. Joe Rivers. A project clerk collected names and addresses of all anglers willing to participate in a future survey about the fishery they were using. As of June 30, approximately 300 addresses had been collected, with a target sample size of 1,000 individuals for the entire angling season. This address list will be used to form the future Spokane River drainage angler panel. Panhandle Region management staff will also use the list to survey the public in response to upcoming regulation proposals.

Initial Survey. I worked in concert with Panhandle Region and University of Idaho staff in developing an initial-question survey that will quantify public support for various management alternatives. The survey was distributed via mail to all anglers agreeing to provide an address as described above. Details and results of this survey will be reported in the upcoming year. The same survey will provide background attitudinal information and demographics for the angler panel prior to the appearance of any regulation proposals.

Focus Groups

Much of the focus on this topic was spent conducting literature reviews and reading resultant literature on design and implementation of focus groups. I read papers from numerous

fields focusing on the design and implementation of focus groups and contacted experts in those few natural resource agencies that are experimenting with or actively using the technique as a method of garnering public input. I met with local group facilitation experts and completed formal course work in basic sociology and mediation-facilitation, in preparation for upcoming work. I viewed video tapes of focus groups and discussed ways of analyzing information from focus groups with experts in Wisconsin, Michigan and Mississippi. Project work plans call for final training in focus group methods and completion of a minimum of seven focus groups in the upcoming contract year.

Non Project-Specific Activities

Research Supervision

As principal research biologist, a substantial portion of the year was spent supervising all statewide IDFG research projects funded with Dingell-Johnson (DJ) funds. I participated in planning, scoping, work plan development, sub-section meetings, reports and provided logistical support/direction for three research projects, including the hatchery trout, wild trout and irrigation diversion projects.

Technical Assistance

In addition to survey development assistance discussed above for the Panhandle Region, I assisted Magic Valley and Upper Snake region personnel in the design of angler opinion surveys for eight regional waters. I also assisted Upper Snake Region personnel in the design of creel surveys and sampling, intended to replicate studies I originally conducted during 1982 on the South Fork Snake River. I served as an IDFG representative on the Research Committee of the Henrys Fork Foundation and provided technical comments and input on the Buffalo River Hydro proposal for fish screening and recruitment studies, developed by the Foundation and Upper Snake Region staff. In addition, I edited four manuscripts for the North American Journal of Fisheries Management and published three papers in the same journal, based on DJ-funded research completed in prior years.

Project technician, Rod Scarpella, assisted Panhandle Region and wild trout project staff with expertise and manpower for bull trout *Salvelinus confluentus* and lake trout *S. namaycush* aging studies. He assisted wild trout staff in completion of age validation studies at Rapid River by developing protocols for Oxytetracycline marking of bull trout for age validation. Approximately two months of time was spent assisting wild trout project personnel on field electrofishing surveys, whirling disease studies and related data analysis. The technician also assisted Southwest Region personnel on high mountain lake surveys and completed the reorganization of a computerized library database for the subsection. He also assisted the statewide Research Manager on a project attempting to relate a variety of physical and chemical variables to several indices of angling quality for reservoir fisheries statewide.

RECOMMENDATIONS

1. Continue working with those regions wishing to use management workshops as a method of obtaining public input and educating anglers.

2. Finalize training and begin conducting focus groups in the upcoming year. Evaluate the potential of the method for garnering public input using IDFG employees as moderators.

3. Finalize development of Spokane Drainage angler panel and conduct initial survey prior to any management changes. Develop other test panels as feasible and appropriate.

4. Complete population simulations that provide perspective on the biological significance of angler non-compliance on the St. Joe and Coeur d'Alene rivers.

ACKNOWLEDGMENTS

Much of the work done in beginning the northern Idaho panel formation has been done in concert with and due to manpower commitments by Chip Corsi and Jim Davis. Craig Miller (University of Idaho) provided helpful assistance on survey development.

LITERATURE CITED

Beamesderfer, R.C., and J.A. North. 1995. Growth, natural mortality, and predicted response to fishing for largemouth and smallmouth bass populations in North America. North American Journal of Fisheries Management. 15:688-704.

Bissell, S.J. and M.D. Duda. 1993. Factors related to hunting and fishing participation in the United States. Phase II: Hunting Focus Groups. Federal Aid in Sport Fish and Wildlife Restoration, Grant Agreement 14-48-0009-92-1252. Responsive Management, Western Association of Fish and Wildlife Agencies.

Elle, F.S. 1993. Wild trout investigations: South Fork Payette River studies. Job Performance Report, Grant F-73-R-15. Idaho Department of Fish and Game, Boise.

Elle, F.S. 1995. Wild trout investigations, Wild trout regulation effects on angler displacement. Annual Performance Report, Grant F-73-R-17. Report No. IDFG 95-33. Idaho Department of Fish and Game, Boise.

Hunt, R.L. 1970. A compendium of research on angling regulations for brook trout conducted at Lawrence Creek, Wisconsin. Research Report 54. Wisconsin Department of Natural Resources, Madison.

Kreuger, R.A. 1988. Focus groups, a practical guide for applied research. Sage Publications, Newbury Park, 198pp.

Lewynsky, V.A. 1986. Evaluation of special angling regulations in the Coeur d'Alene River trout fishery. Master's Thesis. University of Idaho, Moscow.

Reid, W. 1989. A survey of 1987 Idaho anglers opinions and preferences. Job Completion Report, Grant F-35-R-13. Idaho Department of Fish and Game, Boise.

Schill, D.J. and R.L. Scarpella. 1995. Wild trout regulation studies, barbless hook evaluations. Annual Performance Report, Grant F-73-R-17, Report No. IDFG 95-37. Idaho Department of Fish and Game, Boise.

Shetter, D.S. and L.N. Allison. 1955. Comparison of mortality between fly-hooked and worm-hooked trout in a Michigan stream. Miscellaneous Publication No. 9. Institute of Fisheries Research, Michigan Department of Conversation, Lewiston.

Ward, V.M., Bertrand, J.T., and L.F. Brown. 1991. The comparability of focus groups and survey results. Evaluation Review, Vol. 15 (2), p266-283.

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